Space Weather Forecast

Issued on Thursday, 10 August 2023 at 01:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor ongoing solar radiation storm waning. Slight chance of isolated Minor/Moderate radio blackout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Low. The strongest Common-class flare at 09/0701 UTC originated from a sunspot group, which has now rotated around the northwest limb. Six sunspot regions are currently visible on the Earth-facing disc, with the majority of the regions small, simple and stable, with little overall change observed in the past 24 hours. No Earth-directed CMEs have been observed in available coronagraph imagery in the period.

A coronal mass ejection (CME) was seen lifting off the western horizon around 09/1620 UTC, which is currently being analysed for any Earth-directed components - although this feature appears to be far-sided based on its location.

Solar Wind / Geomagnetic Activity: The solar wind, as measured at L1 by ACE and DSCOVR started the period at slightly elevated levels, around 480km/s, gradually declining to background, near 380km/s. The magnetic field has been weak, with the all important north-south component (Bz) also weak. The net effect of the above solar wind parameters was for Quiet geomagnetic conditions (Kp1-2).

Energetic Particles / Solar Radiation: Proton flux showed a response to the Strong-class X-ray flare from 07 Aug with observed levels remaining above the S1 Minor Solar Radiation storm threshold.

Four-Day Space Weather Forecast Summary

Solar Activity: Low levels of solar activity are anticipated, with only a slight chance of further Moderate class flares. The greatest risk for this occurring is probably from a sunspot region located near centre-disc.

Solar Wind / Geomagnetic Activity: No coronal hole high speed streams (HSS) winds feature in the forecast, and there have been no new modelled Earth-directed CMEs in the past 24 hours. Geomagnetic activity is likely to be mostly Quiet (Kp 0-2) throughout the period.

Energetic Particles / Solar Radiation: The high energy (greater than 10 MeV) proton flux should show a decreasing risk of further breaches of S1 as the primarily responsible region rotates further around the far side, falling from Expected to a near background. Slight Chance by the second half of the current UTC working week.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	20	20	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	Yes	100	50	10	5
Very Active	≥ S3 *	No	5	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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